

Figure S1. Interaction analysis of ambroxol to NRP-2. (A) Similarity alignment of the amino acid sequences of NRP-1 and NRP-2. Red boxes labeled possible key amino acids of NRP-1-ambroxol interaction. (B) Possible binding feature of ambroxol with the C1 domain of NRP-2. Ambroxol was shown as sticks with carbon, oxygen and nitrogen colored gray, red and blue, respectively. Secondary structural elements are depicted as ribbons (coils, α -helices; arrows, β -sheets). Color is based on secondary structures (α -helices, red; β -sheets, skyblue; loops, green). (C) 2D diagram of molecular interaction of ambroxol with NRP-2.

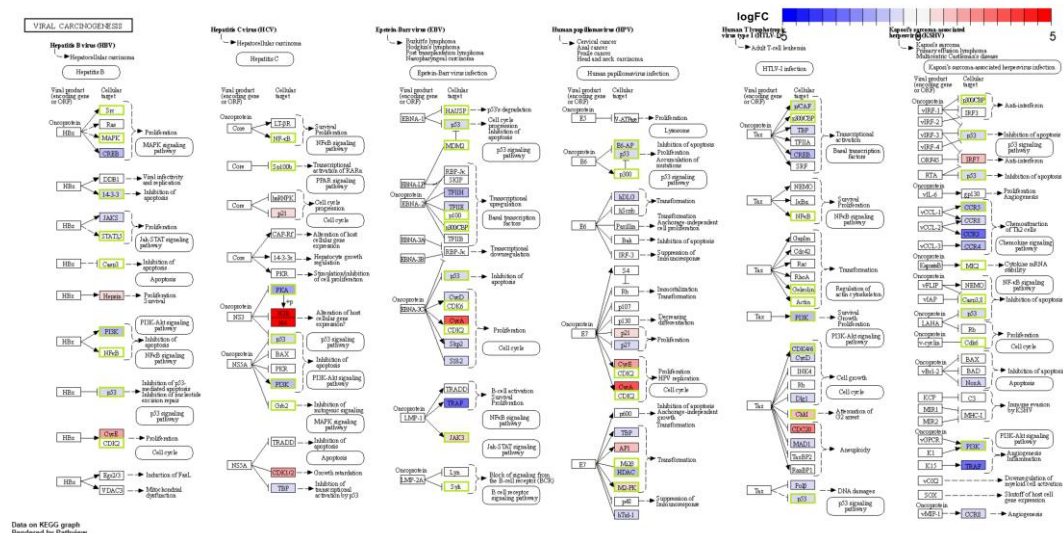


Figure S2. Potential effects of ambroxol in the treatment of covid-19 in Viral carcinogenesis pathway in PBMC. Proteins shown in the green boxes are the potential targets of ambroxol. Red and blue indicates range of up-regulate or down-regulate of DEGs separately.

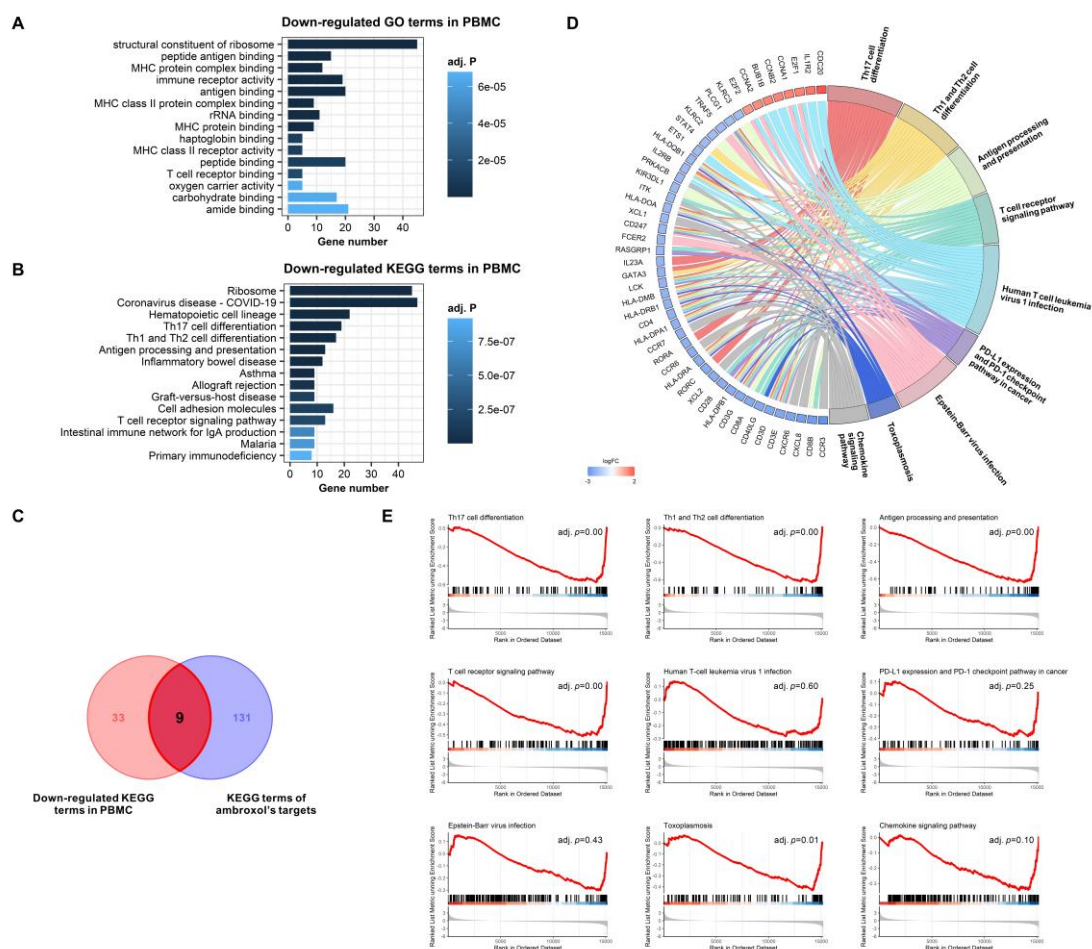


Figure S3. Role of ambroxol in down-regulated pathways in PBMC. (A) GO enrichment results of significantly down-regulated genes in PBMC. The top 15 significant themes with adj. $P < 0.05$ were shown here. (B) KEGG enrichment results of significantly down-regulated genes in PBMC. The top 15 significant themes with adj. $P < 0.05$ were shown here. (C) Venn diagram of down-regulated KEGG terms in PBMC and KEGG terms of ambroxol's targets. (D) Chord diagram of down-regulated genes and their corresponding pathways. Color beside gene name indicates range of up-regulate or down-regulate expression. (E) GSEA tests of corresponding down-regulated pathways in PBMC.

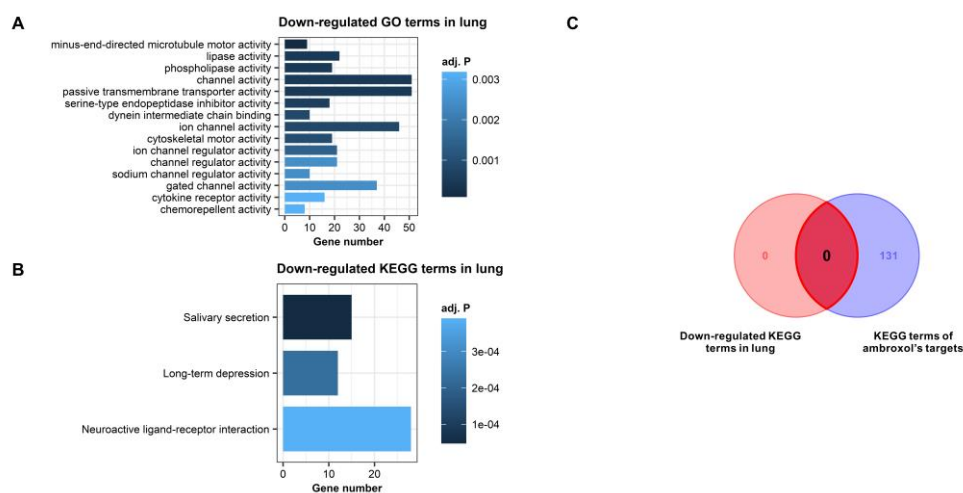


Figure S4. Role of ambroxol in down-regulated pathways in lung tissue. (A) GO enrichment results of significantly down-regulated genes in lung tissue. The top 15 significant themes with $\text{adj. } P < 0.05$ were shown here. **(B)** KEGG enrichment results of significantly down-regulated genes in lung tissue. **(C)** Venn diagram of up-regulated KEGG terms in lung tissue and KEGG terms of ambroxol's targets. There is no intersected down-regulated KEGG pathways in lung tissue according to the previous threshold.